

Science Unit Overview – Year 2

Sc 4: Electricity

Week	Objectives and activities	Differentiation	Resources
Week 1	<p><i>LO: that everyday appliances use electricity; these include things that light up, heat up, produce sounds and move.</i></p> <p>Introduce new topic: Electricity. Give children time in partners to think about what they already know about electricity and what they want to find out. Make a mindmap and scribe ideas and questions.</p> <p>Have some objects on the floor in front of you. Some need electricity (mains/battery) to work, others don't. Try to get each object to work. Note that the ones that need electricity can't work by themselves. They need power. How do we know when electricity is being used by each object e.g. does it light up/get warm/produce a sound/move?</p> <p>DISCUSS THAT ELECTRICITY CAN BE DANGEROUS. CHILDREN SHOULD NOT GO NEAR THE PLUGS AND MUST TAKE CARE WITH ELECTRICAL ITEMS.</p>	<p><i>Remembering</i> – Split page into 4 with each square having 1 of the following titles: movement, light, heat and sound. Chn produce a list of electrical appliances that correlate to each heading. Use real items/picture cards as aids.</p> <p><i>Understanding</i> – Draw 4 electrical appliances and explain how they use electricity.</p> <p><i>Applying</i> – Give chn a selection of working and not working electrical appliances. Chn to test each one and explain how they know each is working or not working.</p> <p><i>Analysing</i> – Compare 2 pictures for example, a cooker and a fridge. Discuss how they are similar and how are they different.</p> <p><i>Evaluating</i> – Give chn a selection of pictures of electrical items on smartboard. Chn to evaluate their use if they were not powered by electricity.</p> <p><i>Creating</i> – Design a new toy that is powered by electricity. How would you know that it is being sourced by electricity?</p>	<p>Selection of electrical items – intro, different items for 'applying' task.</p> <p>Picture cards – 'Remembering' and 'Analysing' activities.</p> <p>Smartboard document – 'evaluating' activity.</p>
Week 2	<p><i>LO: that everyday appliances are connected to the mains and that they must be used safely.</i></p> <p>Recap the meaning of 'electrical appliances' and sort pictures of electrical appliances into a Venn Diagram to show those that are powered by batteries/mains/both.</p> <p>Explain that electricity can be extremely dangerous. They should never touch sockets or play with electrical equipment. They should not play near pylons, railway lines or substations. Explain briefly why water is so dangerous when linked to electricity, because it conducts electricity. Keep electrical objects away from water. Explain that batteries are generally a safe source of electricity although they can be dangerous because of the chemicals inside them and large batteries such as car batteries will give a shock.</p>	<p><i>Remembering</i> – Chn to design a poster showing how to use electricity safely.</p> <p><i>Understanding</i> – Make a short video clip of 'Using electricity safely'. Demonstrate how many things around school are powered by electricity and how they can be used safely.</p> <p><i>Applying</i> – Design a 'Spot the hazards' poster. Draw a picture of a room (e.g. classroom, kitchen, bedroom) with electrical hazards. Share with some yr 1 chn – can the yr1 chn spot the hazards and can the yr 2 chn then explain and how we can use electricity safely in different situations?</p> <p><i>Analysing</i> – Chn to perform a safety check around school, analysing how safe the electrical appliances are. How could the school be safer?</p> <p><i>Evaluating</i> – Chn to evaluate whether life was safer before electricity was invented?</p> <p><i>Creating</i> – Chn to draw an electrically safe classroom, labeling what they have done to ensure it is safe.</p>	<p>Itouches – Understanding activity</p> <p>Clipboards, and safety checklist – Analysing activity</p>

<p>Week 3</p>	<p><i>What is a circuit?</i> <i>L.O. To make a circuit using a battery, wires, and bulbs. To understand there is a positive and negative pole in a battery.</i></p> <p>Show chn different types of batteries and the inside of the battery and explain how it has a north and south pole. Demonstrate how a torch does not work if the battery is inserted the wrong way round. Ask chn to list items which need batteries on ind. w/bds.</p> <p>Reinforce safety points: Never put them in your mouth or put them in the bin.</p> <p>Model how to make a circuit and use appropriate vocabulary to name the different parts e.g. battery, crocodile wires, battery holder, lamp.</p> <p>Plenary: CT to pose questions regarding the circuits – What would happen if I put in two lamps? How could I turn the lamp on and off? In pairs, chn to see if they can come up with their own question. CT to scribe, some chn will investigate these in next lesson. (2a Ask questions and decide how to answer them.)</p>	<p><i>All chn to make a circuit. Then...</i></p> <p><i>Remembering</i> – In different photographs of circuits on IWB, children to label the different parts.</p> <p><i>Understanding</i> – Chn to draw a picture of their circuit, labeling each part.</p> <p><i>Applying</i> – Chn to draw a diagram of a torch showing how they think the torch lights up.</p> <p><i>Analysing</i> – Share two pictures of similar circuits, one that does work and another that doesn't. Chn to analyse which they think would work and explain why the other one won't. Can they draw another circuit that would not work?</p> <p><i>Evaluating</i> – Chn to draw the circuit and evaluate its safety. Why is it safe for chn to be able to make a circuit, could it be safer?</p> <p><i>Creating</i> – Think of a new toy that operates on batteries. Draw a diagram of the inside of the toy and clearly label how they think it would work.</p>	<p>Crocodile clips, batteries, light bulbs, battery holders.</p> <p>IWB task – 'Remembering' activity</p> <p>Pictures of 2 circuits that do and don't work – 'Analysing' activity.</p>
<p>Week 4</p>	<p><i>Is it a circuit?</i> <i>L.O. To identify why circuits do not work. To make and test predictions of different circuits.</i> <i>(2c – to think about what might happen before deciding what to do)</i></p> <p>On IWB show chn a diagram of a circuit and ask them to label the different parts. Then show a circuit that does not work. Ask the children what they think will happen and then make the circuit and identify that it doesn't work. Ask for explanations. Confirm or correct chn.</p>	<p><i>Remembering</i> – Chn to practically make circuits by copying different diagrams of circuits. Predict whether or not they will work. Do they work? Orally explain why or why not.</p> <p><i>Understanding</i> – Chn to see how many different ways they can make a circuit with a lamp, 2 wires and a battery that does not light up. Record the different circuits in their books as a diagram.</p> <p><i>Applying</i> – Chn to illustrate three different ways to explain why a torch may not work.</p> <p><i>Analysing</i> – Chn to analyse each part of the circuit and come up with a list of reasons why each part may result in the lamp not lighting up.</p> <p><i>Evaluating</i> – Chn to investigate a question along these lines: What happens when I add two bulbs to my circuit? Then, can they think of three ways of breaking this circuit?</p> <p><i>Creating</i> – Chn to create a circuit that makes the lamp the brightest they can. Then, can they think of three ways of breaking this circuit?</p>	<p>Crocodile clips, batteries, light bulbs, battery holders.</p> <p>Diagrams of circuits – 'Remembering' activity</p>

Week 5	<p><i>How can I turn a lamp on and off?</i> <i>L.O. To know how a switch can be used to break a circuit.</i></p> <p>On IWB show chn a diagram of a circuit and ask them to label the different parts. Ask a chd to come and make the circuit practically. Introduce them to the switch component and ask them how they think it could be used and how it works. Explain how it breaks up the circuit, similar to other ways that we found out during the previous lesson. Model how to add it to the circuit and how it turns the lamp on or off.</p>	<p><i>Remembering</i> – Chn to make a circuit with a switch and a lamp and label the different parts. Chn to describe to their friend what they have done.</p> <p><i>Understanding</i> – Chn to make a circuit with a switch and a lamp and label the different parts. Chn to explain to their friend how the switch works.</p> <p><i>Applying</i> – With a selection of toys chn to orally explain how they can turn each toy on and off and how they think the switch works. Chn to draw a diagram of one of the toys when the switch is on and then when it is off.</p> <p><i>Analysing</i> – After making a circuit with a switch, chn to analyse a list of electrical appliances and whether or not they have a switch.</p> <p><i>Evaluating</i> – After makin a circuit with a switch, chn to evaluate a list of objects and whether they feel they should be modified to include a switch. Chn to explain their reasons.</p> <p><i>Creating</i> – After makin a circuit with a switch, chn to make a new invention that is powered by an electrical circuit that can be turned on or off.</p>	<p>Crocodile clips, batteries, light bulbs, battery holders, switches.</p> <p>List of electrical appliances – ‘Analysing’ activity</p> <p>List of objects – ‘Evaluating’ activity</p>
Week 6	<p><i>L.O. Circuits can be used to make simple devices.</i></p> <p>Revise what is needed in a circuit and all the things we need to do to ensure the circuit will work.</p> <p>Share with chn how circuits can be used to make simple devices (IWB).</p>	<p><i>Remembering</i> – Chn to choose an idea from the activity sheets and turn it into a circuit e.g. cardboard lighthouse with lamp on the top.</p> <p><i>Understanding</i> – Chn to choose an idea from the activity sheets and turn it into a circuit e.g. cardboard lighthouse with lamp on the top. Chn to show and tell their piece of work to the rest of the class showing how they made it and how the lighthouse shines it light.</p> <p><i>Applying</i> – Chn to analyse 3 circuits for a lighting campfire and work out which one would work. Copy the design and test it. If they made it again, could they think of a way of making it even better?</p> <p><i>Analysing</i> – Chn to analyse 3 circuits for a lighting campfire and take out the best features of each to create their own lighting campfire. Present their own to others in their group and reason why they decided to use certain features.</p> <p><i>Evaluating</i> – Chn to choose an idea from the activity sheets and then ask a ‘what if’ question. E.g. What if I wanted a lamp on the first floor of the lighthouse and a brighter lamp at the top?’ Chn to see if they can test their what if question and find out their answer.</p> <p><i>Creating</i> – Chn to create their own simple device using a simple circuit involving a lamp/buzzer/propeller and switch. Can they then finsh by scribing a list of ‘what if’ questions to see how it could be later modified?</p>	<p>Crocodile clips, batteries, light bulbs, battery holders, switches, buzzers, propellers, cardboard, tissue paper, paperclips, coloured markers, activity sheets</p>